SEQUENCE LISTING

<110> Institute of Immunology, PLA
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Shi, Tongdong
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<120> Immunogen for Preparation of Therapeutic Vaccines or Drugs for Treatment of Hepatitis B and the Producing Method and Use Thereof

<130> CCPT-1-24975

<140> 10/528,350
<141> 2006-02-15

<150> PCT/CN03/00792
<151> 2003-09-18

<150> CN 02130738.5
<151> 2002-09-18

<160> 73

<170> PatentIn version 3.5

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CH3(CH2)14CO

<220>
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<223> Xaa can be any naturally occurring amino acid

<400> 1

Xaa Ala Ala Ser Ser Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly
1 5 10 15

Ile Thr Glu Ala Ala Ala Phe Leu Pro Ser Asp Phe Phe Pro Ser Val
20 25 30

Gly Gly Gly Asp Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala
35 40 45

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(CH3CH2CH=CHCH2CH=CH(CH2)CH=CH(CH2)7CO

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<223> Xaa can be any naturally occurring amino acid

<400> 2

Xaa Ala Ala Ser Ser Pro Ala Arg Glu Gly Gly Gly Trp Leu Ser Leu
1 5 10 15

Leu Val Pro Phe Val Ser Ser Ser Asp Pro Arg Val Arg Gly Leu Tyr
20 25 30

Phe Pro Ala
35

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Xaa Ala Ala Ser Ser Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly
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Ile Thr Glu Gly Gly Gly Asp Pro Arg Val Arg Gly Leu Tyr Phe Pro
20 25 30

Ala

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1 5 10 15

Ile Thr Glu Ala Ala Ala Phe Leu Pro Ser Asp Phe Phe Pro Ser Val
20 25 30

Gly Gly Gly Cys Thr Lys Pro Thr Asp Gly Asn Cys Thr
35 40 45

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1 5 10 15

Ile Thr Glu Ala Ala Ala Ser Ile Val Ser Pro Phe Ile Pro Leu Leu
20 25 30

Gly Gly Gly Asp Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala
35 40 45

<210> 6
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<213> Unknown

<220>
<223> Th cell epitope from tetanus toxoid or variant species thereof

<400> 6

Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu
1 5 10

<210> 7
<211> 5
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<213> Unknown

<220>
<223> Th cell epitope from tetanus toxoid or variant species thereof

<400> 7

Pro Ala Asp Arg Glu
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<400> 8

Pro Leu Gly Phe Phe Pro Asp His
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<210> 9
<211> 15
<212> PRT
<213> Hepatitis B virus

<400> 9

Met Gln Trp Asn Ser Thr Ala Leu His Gln Ala Leu Gln Asp Pro
1 5 10 15

<210> 10
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Ser Ile Leu Ser Lys Thr Gly Asp Pro Val

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<210> 11
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<400> 11

Val Leu Gln Ala Gly Phe Phe Leu Leu
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Phe Leu Leu Thr Arg Ile Leu Thr Ile
1 5

<210> 13
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<400> 13

Phe Leu Gly Gly Thr Pro Val Cys Leu
1 5

<210> 14
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Leu Leu Cys Leu Ile Phe Leu Leu Val
1 5

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Leu Leu Asp Tyr Gln Gly Met Leu Pro Val
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<210> 16
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<400> 16

Trp Leu Ser Leu Leu Val Pro Phe Val
1 5

<210> 17
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Gly Leu Tyr Ser Ser Thr Val Pro Val
1 5

<210> 18
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Lys Val Leu His Lys Arg Thr Leu Gly Leu
1 5 10

<210> 19
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<400> 19

Val Leu His Lys Arg Thr Leu Gly Leu
1 5

<210> 20
<211> 10
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<400> 20

Gly Leu Ser Ala Met Ser Thr Thr Asp Leu
1 5 10

<210> 21
<211> 9
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<400> 21

Cys Leu Phe Lys Asp Trp Glu Glu Leu
1 5

<210> 22
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<212> PRT
<213> Hepatitis B virus

<400> 22

Val Leu Gly Gly Cys Arg His Lys Leu Val
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<210> 23
<211> 10
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<213> Hepatitis B virus

<400> 23

Phe Leu Pro Ser Asp Phe Phe Pro Ser Val
1 5 10

<210> 24
<211> 11
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<400> 24

Ser Thr Leu Pro Glu Thr Thr Val Val Arg Arg
1 5 10

<210> 25
<211> 9
<212> PRT
<213> Hepatitis B virus

<400> 25

Glu Tyr Leu Val Ser Phe Gly Val Trp
1 5

<210> 26
<211> 9
<212> PRT
<213> Hepatitis B virus

<400> 26

Gly Leu Tyr Ser Ser Thr Val Pro Val
1 5

<210> 27
<211> 9
<212> PRT
<213> Hepatitis B virus

<400> 27

Gly Leu Ser Arg Tyr Val Ala Arg Leu
1 5

<210> 28
<211> 9
<212> PRT
<213> Hepatitis B virus

<400> 28

Phe Leu Leu Ser Leu Gly Ile His Leu
1 5

<210> 29
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<212> PRT
<213> Hepatitis B virus

<400> 29

Ile Leu Arg Gly Thr Ser Phe Val Tyr Val
1 5 10

<210> 30
<211> 9
<212> PRT
<213> Hepatitis B virus

<400> 30

Ser Leu Tyr Ala Asp Ser Pro Ser Val
1 5

<210> 31
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<213> Hepatitis B virus

<400> 31

Lys Tyr Thr Ser Phe Pro Trp Leu Leu
1 5

<210> 32
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<212> PRT
<213> Hepatitis B virus

<400> 32

Ser Leu Tyr Ala Asp Ser Pro Ser Val
1 5

<210> 33
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<400> 33

Ala Leu Met Pro Leu Tyr Ala Cys Ile
1 5

<210> 34
<211> 9
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<400> 34

Tyr Met Asp Asp Val Val Leu Gly Ala
1 5

<210> 35
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<212> PRT
<213> Hepatitis B virus

<400> 35

Trp Ile Leu Arg Gly Thr Ser Phe Val
1 5

<210> 36
<211> 9
<212> PRT
<213> Hepatitis B virus

<400> 36

Lys Leu His Leu Tyr Ser His Pro Ile
1 5

<210> 37
<211> 9
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<213> Hepatitis B virus

<400> 37

Phe Thr Gln Ala Gly Tyr Pro Ala Leu
1 5

<210> 38
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<400> 38

Ser Leu Asn Phe Leu Gly Gly Thr Thr Val
1 5 10

<210> 39
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<400> 39

Leu Leu Asp Tyr Gln Gly Met Leu Pro Val
1 5 10

<210> 40
<211> 10
<212> PRT
<213> Hepatitis B virus

<400> 40

Leu Leu Val Pro Phe Val Gln Trp Phe Val
1 5 10

<210> 41
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<400> 41

Gly Leu Ser Pro Thr Val Trp Leu Ser Val
1 5 10

<210> 42
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<400> 42

Leu Leu Pro Ile Phe Phe Cys Leu Trp Val
1 5 10

<210> 43
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Tyr Val Asn Thr Asn Met Gly
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<400> 44

Tyr Val Asn Thr Asn Met Gly Leu Lys Ser Glu Gln
1 5 10

<210> 45

<211> 10
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<400> 45

Ser Ile Leu Ser Lys Thr Gly Asp Pro Val
1 5 10

<210> 46
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<212> PRT
<213> Hepatitis B virus

<400> 46

Gly Leu Ser Pro Thr Val Trp Leu Ser Val
1 5 10

<210> 47
<211> 10
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<400> 47

Ser Ile Val Ser Pro Phe Ile Pro Leu Leu
1 5 10

<210> 48
<211> 11
<212> PRT
<213> Hepatitis B virus

<400> 48

Asp Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala
1 5 10

<210> 49
<211> 10
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<213> Hepatitis B virus

<400> 49

Cys Thr Lys Pro Thr Asp Gly Asn Cys Thr
1 5 10

<210> 50
<211> 37
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CH3(CH2)10CO

<220>
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<223> Xaa can be any naturally occurring amino acid

<400> 50

Xaa Ala Ala Ser Ser Pro Ala Asp Arg Glu Gly Gly Gly Ser Leu Asn
1 5 10 15

Phe Leu Gly Gly Thr Thr Val Ser Ser Ser Asp Pro Arg Val Arg Gly
20 25 30

Leu Tyr Phe Pro Ala
35

<210> 51
<211> 45
<212> PRT
<213> Artificial Sequence

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CH3(CH2)14CO

<220>
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<222> (1)..(1)
<223> Xaa can be any naturally occurring amino acid

<400> 51

Xaa Ala Ala Ser Ser Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly
1 5 10 15

Ile Thr Glu Ala Ala Ala Leu Leu Cys Leu Ile Phe Leu Leu Val Gly
20 25 30

Gly Gly Asp Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala
35 40 45

<210> 52
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<220>

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CH3(CH2)16CO

<220>
<221> misc_feature
<222> (1)..(1)
<223> Xaa can be any naturally occurring amino acid

<400> 52

Xaa Ala Ala Ser Ser Pro Ala Asp Arg Glu Ala Ala Ala Leu Leu Asp
1 5 10 15

Tyr Gln Gly Met Leu Pro Val Gly Gly Gly Asp Pro Arg Val Arg Gly
20 25 30

Leu Tyr Phe Pro Ala
35

<210> 53
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CH3(CH2)7CH=CH(CH2)-CO, CH3 CH2CH=CHCH2CH=CH(CH2)7CO7

<220>
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<222> (1)..(1)
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<400> 53

Xaa Ala Ala Ser Ser Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly
1 5 10 15

Ile Thr Glu Gly Gly Gly
20

<210> 54
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CH3CH2CH=CHCH2CH=CH(CH2)CH=CH(CH2)7CO

<220>
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<223> Xaa can be any naturally occurring amino acid

<400> 54

Xaa Ala Ala Leu Pro Ser Asp Phe Phe Pro Ser Val Ala Ala Ala Asp
1 5 10 15

Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala
20 25

<210> 55
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CH3CH2CH=CHCH2CH=CH(CH2)CH=CH(CH2)7CO

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<223> Xaa can be any naturally occurring amino acid

<400> 55

Xaa Ala Ala Ser Ser Pro Ala Asp Arg Glu Gly Gly Gly Trp Leu Ser
1 5 10 15

Leu Leu Val Pro Phe Val Ser Ser Ser Asp Pro Arg Val Arg Gly Leu
20 25 30

Tyr Phe Pro Ala
35

<210> 56
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CH3(CH2)14CO

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<223> Xaa can be any naturally occurring amino acid

<400> 56

Xaa Ala Ala Ser Ser Pro Ala Asp Arg Glu Ala Ala Ala Phe Leu Pro
1 5 10 15

Ser Asp Phe Phe Pro Ser Val Gly Gly Gly Asp Pro Arg Val Arg Gly
20 25 30

Leu Tyr Phe Pro Ala
35

<210> 57
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CH3(CH2)14CO

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<400> 57

Xaa Ala Ala Ser Ser Pro Ala Asp Arg Glu Gly Gly Gly Leu Leu Val
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Pro Phe Val Gln Trp Phe Val Ser Ser Ser Asp Pro Arg Val Arg Gly
20 25 30

Leu Tyr Phe Pro Ala
35

<210> 58
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CH3(CH2)14CO

<220>
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<400> 58

Xaa Ala Ala Ser Ser Pro Ala Asp Arg Glu Ala Ala Ala Gly Leu Ser
1 5 10 15

Pro Thr Val Trp Leu Ser Val Gly Gly Gly Asp Pro Arg Val Arg Gly
20 25 30

Leu Tyr Phe Pro Ala
35

<210> 59
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CH3(CH2)16CO

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<400> 59

Xaa Ala Ala Ser Ser Pro Ala Asp Arg Glu Ala Ala Ala Leu Leu Pro
1 5 10 15

Ile Phe Phe Cys Leu Trp Val Gly Gly Gly Asp Pro Arg Val Arg Gly
20 25 30

Leu Tyr Phe Pro Ala
35

<210> 60
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<400> 60

Xaa Ala Ala Ser Ser Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly
1 5 10 15

Ile Thr Glu Ala Ala Ala Tyr Val Asn Thr Asn Met Gly Gly Gly Gly
20 25 30

Asp Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala
35 40

<210> 61
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<400> 61

Xaa Ala Ala Ser Ser Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly
1 5 10 15

Ile Thr Glu Gly Gly Gly Phe Leu Pro Ser Asp Phe Phe Pro Ser Val
20 25 30

Ser Ser Ser Asp Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala
35 40 45

<210> 62
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<222> (1)..(1)
<223> Xaa can be any naturally occurring amino acid

<400> 62

Xaa Ala Ala Ser Ser Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly
1 5 10 15

Ile Thr Glu Ala Ala Ala Tyr Val Asn Thr Asn Met Gly Leu Lys Gly
20 25 30

Gly Gly Asp Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala
35 40 45

<210> 63
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<222> (1)..(1)
<223> Xaa can be any naturally occurring amino acid

<400> 63

Xaa Ala Ala Ser Ser Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly
1 5 10 15

Ile Thr Glu Ala Ala Ala Pro Leu Gly Phe Phe Pro Asp His Gly Gly
20 25 30

Gly Asp Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala
        35   40

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<222> (1)..(1)
<223> Xaa can be any naturally occurring amino acid

<400> 64

Xaa Ala Ala Ser Ser Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly
1   5   10   15

Ile Thr Glu Ala Ala Ala Met Gln Trp Asn Ser Thr Ala Leu His Gln
            20   25   30

Ala Leu Gln Asp Pro Gly Gly Gly Asp Pro Arg Val Arg Gly Leu Tyr
        35   40   45

Phe Pro Ala
    50

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<223> Xaa can be any naturally occurring amino acid

<400> 65

Xaa Ala Ala Ser Ser Pro Asp Ala Arg Glu Ala Ala Ala Ser Ile Leu

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Ser Lys Thr Gly Asp Pro Val Gly Gly Gly Asp Pro Arg Val Arg Gly
20 25 30

Leu Tyr Phe Pro Ala
35

<210> 66
<211> 36
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CH3(CH2)16CO

<220>
<221> misc_feature
<222> (1)..(1)
<223> Xaa can be any naturally occurring amino acid

<400> 66

Xaa Ala Ala Ser Ser Pro Ala Asp Arg Glu Ala Ala Ala Val Leu Gln
1 5 10 15

Ala Gly Phe Phe Leu Leu Gly Gly Gly Asp Pro Arg Val Arg Gly Leu
20 25 30

Tyr Phe Pro Ala
35

<210> 67
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CH3(CH2)16CO

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<221> misc_feature
<222> (1)..(1)
<223> Xaa can be any naturally occurring amino acid

<400> 67

Xaa Ala Ala Ser Ser Pro Ala Asp Arg Glu Ser Ser Ser Phe Leu Leu
1 5 10 15

Thr Arg Ile Leu Thr Ile Gly Gly Gly Asp Pro Arg Val Arg Gly Leu
20 25 30

Tyr Phe Pro Ala
35

<210> 68
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CH3(CH2)16CO

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<221> misc_feature
<222> (1)..(1)
<223> Xaa can be any naturally occurring amino acid

<400> 68

Xaa Ala Ala Ser Ser Pro Ala Asp Arg Glu Ala Ala Ala Phe Leu Gly
1 5 10 15

Gly Thr Pro Val Cys Leu Gly Gly Gly Asp Pro Arg Val Arg Gly Leu
20 25 30

Tyr Phe Pro Ala
35

<210> 69
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CH3(CH2)14CO

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<222> (1)..(1)
<223> Xaa can be any naturally occurring amino acid

<400> 69

Xaa Ala Ala Ser Ser Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly
1 5 10 15

Ile Thr Glu Ala Ala Ala Gly Leu Ser Pro Thr Val Trp Leu Ser Val
20 25 30

Gly Gly Gly Asp Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala
35 40 45

<210> 70
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CH3(CH2)16CO

<400> 70

Lys Ser Ser Pro Ala Asp Arg Glu Ala Ala Ala Ser Thr Leu Pro Glu
1 5 10 15

Thr Thr Val Val Arg Arg Gly Gly Gly Asp Pro Arg Val Arg Gly Leu
20 25 30

Tyr Phe Pro Ala
35

<210> 71
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CH3CH2CH=CHCH2CH=CH(CH2)CH=CH(CH2)7CO

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<221> misc_feature
<222> (1)..(1)
<223> Xaa can be any naturally occurring amino acid

<400> 71

Xaa Ala Ala Ser Ser Pro Ala Asp Arg Glu Gly Gly Gly Trp Leu Ser
1 5 10 15

Leu Leu Val Pro Phe Val Ser Ser Ser Asp Pro Arg Val Arg Gly Leu
20 25 30

Tyr Phe Pro Ala Arg Gly Leu Tyr Phe Pro Ala
35 40

<210> 72
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CH3(CH2)14CO

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<223> Xaa can be any naturally occurring amino acid

<400> 72

Xaa Ala Ala Ser Ser Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile
1 5 10 15

Thr Glu Ala Ala Ala Met Gln Trp Asn Ser Thr Ala Leu His Gln Ala
20 25 30

Leu Gln Asp Pro Gly Gly Gly Asp Pro Arg Val Arg Gly Leu Tyr Phe
35 40 45

Pro Ala
50

<210> 73
<211> 30
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<213> Artificial Sequence

<220>
<223> Immunogen

<220>
<221> MISC_FEATURE

<223> Xaa is Lys with the following N-terminal modification:
CH3(CH2)7CH=CH(CH2)CO, CH3CH2CH=CHCH2CH=CH(CH2)7CO7

<220>
<221> misc_feature
<222> (1)..(1)
<223> Xaa can be any naturally occurring amino acid

<400> 73

Xaa Ala Ala Ser Ser Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly
1 5 10 15

Ile Thr Glu Gly Gly Gly Asp Pro Arg Val Arg Gly Leu Tyr
20 25 30